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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,800	08/30/2000	Paul S. Neuman	RA 5290(33012/289/101)	1186
27516	7590	01/31/2006	EXAMINER	
UNISYS CORPORATION			VITAL, PIERRE M	
MS 4773			ART UNIT	PAPER NUMBER
PO BOX 64942				
ST. PAUL, MN 55164-0942			2188	

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/650,800	NEUMAN, PAUL S.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Pierre M. Vital	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 10 January 2006.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 1-20 is/are allowed.
- 6) Claim(s) 21-25 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 August 2000 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to applicant's communication filed January 10, 2006 in response to PTO Office Action mailed November 3, 2005. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.
  
2. Claims 1-25 have been presented for examination in this application. In response to the last Office Action, claims 1-21 have been amended. No claims have been canceled or added. As a result, claims 1-25 remain pending in this application.

### ***Response to Arguments***

3. Applicant's arguments, see Remarks, filed January 10, 2006, with respect to the rejection(s) of claim(s) 21-25 have been fully considered and are persuasive. Therefore, the finality of the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made. Rejection of the claims based on the new grounds follow herewith.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abato et al (US 5,627,993) and Lai (US 5,564,035).

As per claim 21, Abato discloses an apparatus comprising:

an instruction processor (processor 12, Fig. 1);

a level one cache memory directly coupled to said instruction processor (cache 18; Fig. 1);

a level two cache memory directly coupled to said level one cache memory (cache 16, Fig. 1).

However, Abato does not specifically teach a data element having a parity error stored in said level two cache memory and a facility responsively coupled to said level one cache memory and said level two cache memory which detects said parity error of said data element and invalidates a corresponding data element within said level two cache memory as recited in the claim.

Lai discloses invalidating data in a level one cache memory in response to a parity error of a data element in a level two cache memory to provide a memory management policy preserving cache coherency (column 2, lines 48-56).

It would have been obvious to one of ordinary skill in the art, having the teachings of Abato and Lai before him at the time the invention was made, to modify the system of Abato to include invalidating data in a level two cache memory in response to a parity error of a data element because it was well known to provide a memory management policy preserving cache coherency (column 2, lines 48-56) as taught by Lai.

6. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abato et al (US 5,627,993) and Lai (US 5,564,035) and Lynch et al (US 6,061,766).

As per claim 22, the combination of Abato and Lai discloses the claimed invention as detailed above in the previous paragraphs. However, Abato and Lai do not specifically teach a level one cache memory comprising a level one instruction cache memory and a level one operand cache memory as recited in the claim.

Lynch discloses a level one cache comprising a data cache for storing data as it is passed back and forth from the execution units of the processor and an instruction

cache holding instructions prior to execution by the processor's execution units (col. 3, lines 43-48).

It would have been obvious to one of ordinary skill in the art, having the teachings of Abato and Lai and Lynch before him at the time the invention was made, to modify the system of Abato and Lai to include a level one instruction cache memory and a level one operand cache memory because a level one data cache was well known for storing data as it is passed back and forth from the execution units of the processor and a level one instruction cache was well known for holding instructions prior to execution by the processor's execution units as taught by Lynch.

As per claim 23, Lai discloses invalidating a write data element of a level one cache memory in response to a level one cache memory write hit and a level two cache memory hit [*hit in L2 cache and hit in L1 cache, corresponding cache line can be invalidated*; col. 2, lines 41-57] to maintain multiprocessor coherency.

As per claim 24, Lynch discloses a snooping circuit [*snoop queue 402; Fig. 4*].

As per claim 25, Lynch discloses said write data element is located within said level one operand cache memory [col. 3, lines 43-45].

***Allowable Subject Matter***

7. Claims 1-20 are allowed over the prior art of record.
  
8. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 1, 6, 11 and 16, the prior art of record does not teach or suggest “a processor with a system controller containing a semi-store-in level one cache memory having an associated duplicate tag memory responsively coupled to a dedicated level two cache memory having an associated tag memory” in combination with the other element set forth in the claimed invention.

Claims 2-5, 7-10, 12-15 and 17-20 are allowable as being directly or indirectly dependent upon claims 1, 6, 11 and 16, respectively and having additional allowable features therein.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. The examiner requests, in response to this Office action, support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line no(s) in the specification and/or drawing figure(s). This will assist the examiner in prosecuting the application.

11. When responding to this office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present, in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections See 37 CFR 1.111(c).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre M. Vital whose telephone number is (571) 272-4215. The examiner can normally be reached on 8:30 am - 6:00 pm, alternate Fridays off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 24, 2006



**PIERRE VITAL  
PRIMARY EXAMINER**